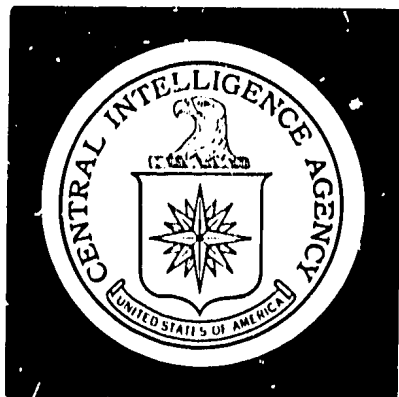


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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

The Importance of US Coal Exports

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
September 1970

INTELLIGENCE MEMORANDUM

The Importance Of US Coal Exports

Introduction

A potentially serious coal shortage in the United States has caused some domestic consumers, particularly the electric utilities, to urge an embargo of US exports of coal. The United States mines the world's best coking coal and is by far the world's largest exporter of bituminous coal. Japan is the largest importer of US coal, all of which is of metallurgical grade for use by Japan's rapidly expanding iron and steel industry.

This memorandum sets forth the importance of US coal exports to the principal recipients and examines the short-run impact of any curtailment of US exports, especially for Japan's steel industry.

International Importance of US Coal

1. The United States is the world's largest hard coal* producer, followed by the USSR and Communist China. In 1969 the United States mined about 500 million tons, or about 25% of the world total (see Table 1). In terms of exports to the Free World, the United States has no equal. US exports were more than 51 million metric tons in 1969 -- about 10% of production -- compared with 16 million tons

* *Anthracite and bituminous, excluding brown coal and lignite.*

Note: This memorandum was produced solely by CIA. It was prepared by the Office of Economic Research and was coordinated with the Office of Current Intelligence.

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Table 1
World Hard Coal ^{a/} Production
1969

<u>Million Metric Tons</u>	
<u>Country</u>	<u>Production</u>
United States	514
USSR	470
Communist China	250
United Kingdom	151
Poland	135
West Germany	112
India	74
South Africa	52
Japan	45
Australia	44
France	41
Czechoslovakia	27
North Korea	19
Spain	12
Other	84
<i>Total</i>	<i>2,030</i>

a. Anthracite and bituminous coal, excluding brown coal and lignite.

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sold by second-ranking Australia. The United States is even more crucial than the quantity comparisons imply because it is the only large source of the premium-grade coking coal.* Other countries must blend with their lower quality coal to meet modern blast furnace standards. Some 90% of US coal shipments in 1969 went to Japan, Canada, and the European Common Market countries (EC), as shown in Table 2. Excluding shipments to Canada, practically all US coal exports are low-sulphur bituminous coal of metallurgical quality. Roughly 75% of these exports are used by the steelmakers for making coke with most of the remainder used by public utilities.

Table 2
US Exports of Bituminous Coal
1969

<u>Destination</u>	<u>Thousand Metric Tons</u>	<u>Percent of Total</u>
Canada	15,227	29.9
Japan	19,064	37.4
EC countries	10,838	21.2
Brazil	1,671	3.3
Spain	1,655	3.2
Other	2,549	5.0
<i>Total</i>	<i>51,004</i>	<i>100.0</i>

2. The importance of US coal exports has been increasing recently because of growing shortfalls elsewhere. The EC, already a net coal importer, has been cutting back production. The United Kingdom has not expanded production fast enough to meet both

* Heavy coking, low-volatile coal with no more than 8% ash content and good coking characteristics.

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domestic and foreign demand,* and it barely meets local power and heating needs. In Japan, output has stagnated. These factors have been compounded by an unexpectedly high worldwide demand for steel. As a result, US coal exports rose 29% in the first half of 1970 compared with the same 1969 period. The increase to continental European countries was almost 65% and to Japan 36%. However, exports to Canada declined 9% in the face of increased domestic output. Japan is by far the United States' largest coal customer.

3. Canada is the most dependent on US coal of the three main purchasers. Although production in the western provinces is rising, most of this is exported to Japan, and the industrial East depends on the United States for nearly 85% of its coal needs (see Table 3). Mines in the Maritime Provinces are

Table 3

Estimated Hard Coal Supply of Canada, Japan,
and the European Common Market
1969

	Million Metric Tons				
	Canada			Japan	EC
	East	West	Total		
Production	3.3	5.3	8.6	44.7	171.8
Imports	15.6	Negl.	15.6	39.9	21.5
Exports	Negl.	1.1	1.1	Negl.	2.2
Supply	18.9	4.2	23.1	84.6	191.1
Imports from the United States	15.6	0	15.6	19.1	10.8

* UK coal stocks are close to record lows and are adequate only if the winter is not especially cold.

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gradually being phased out. A substantial drop -- 50% or so -- in coal from the United States would have a major adverse impact on Canadian economic activity. Canada uses large amounts of coal for power, heating, and steel production, and while some of the import shortfall could be made up by diverting Western Canadian coal production now shipped to Japan, the effort would be costly and in any event would only amount to several million tons* per year out of a total import need of about 16 million tons.

4. The EC is much less dependent on coal imports than either Canada or Japan. Only about 10% of the roughly 190 million tons consumed in 1969 were imported. About half -- 11 million tons -- were from the United States; the remainder comes mainly from the United Kingdom and Eastern Europe. While EC purchases of US coal declined nearly 50% between 1965 and 1969, they have increased rapidly this year and are expected to continue to climb. A combination of events has been responsible. Demand has been greater because of other fuel shortages and rising steel output, while supply has been less because uneconomic mines have been closed. The United Kingdom, normally an exporter to the EC, is experiencing difficulty in meeting its own needs. A loss of US coal would be felt both by EC steelmakers, who have recently increased their dependence on US premium-quality coking coal, and by public utilities. Although almost all US coal purchased by the EC is metallurgical quality, more than half is used by public utilities because the delivered price is lower than that of locally produced coal. US coal has a lower sulphur content, which is important in controlling pollution.**

5. Coal is a major US export. In 1969, coal exports were about \$594 million, ranking about the same as items such as power machinery, steelmill products, and nonferrous metals. Although coal

* *Contracts call for Canadian coal exports to Japan to reach 6 million tons in 1970 and 14 million tons by 1975. The 1970 amount is unlikely to be reached, however, as less than 1 million tons had been shipped to Japan by the end of June.*

** *Even in the United States, despite its higher cost, low-sulphur coal is in increasing demand by public utilities in order to comply with new anti-pollution laws.*

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exports accounted for less than 2% of total 1969 exports of \$18 billion, they about matched the US trade surplus of some \$638 million.* Moreover, coal exports are expected to reach \$800 million in 1970.

Importance to Japan

5. US coal is critically important to Japan's steel industry because it accounts for more than 80% of the premium-quality coking coal consumed. Japan does not mine premium-quality coal, and only small amounts are available from other countries. Most of the coking coal Japan produces requires blending with premium-quality US coal to obtain coke with the compressive strength necessary for efficiently operating Japan's large blast furnaces. Premium-quality coking coal will increase in importance as Japan continues to build even larger blast furnaces, some of which are scheduled to begin operations late in 1970 and in 1971.

7. The Japanese steel industry's heavy reliance on imported coking coal has grown in recent years. In 1965, imports accounted for about 55% of the industry's needs, but by 1969 the share had reached 75%. This shift reflects both rapidly growing steel output -- doubling between 1965 and 1969 -- and stagnating domestic coking coal output -- about 12 million tons (see Table 4). Japanese coal mines have been steadily closing chiefly because reserves are of too low quality to be commercially exploited.

8. In 1969, coking coal requirements reached 52 million tons. By 1971, Japanese steel officials predict a need for 62 million tons. With domestic production constant, imports should rise from 40 million tons in 1969 to more than 50 million tons in 1971. These increased imports would be supplied under long-term contracts signed in earlier years. Steelmakers have been unable to build any significant stocks because of the rapidly rising requirements. Periodically, they buy coal on a spot basis

* Balance-of-payments concept.

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Table 4
Japanese Supply of Coking Coal

<u>Country of Origin</u>	<u>Thousand Metric Tons</u>					<u>Jan-Jun 1970</u>
	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	
Australia	6,620	8,054	8,983	11,985	15,543	7,799
Canada	751	838	815	993	929	833
Communist China	475	657	891	66	0	0
Poland	0	106	727	996	1,140	515
USSR	1,149	1,477	2,220	2,667	3,057	1,414
United States	6,904	7,068	10,117	14,229	19,064	11,992
Other	5	21	277	31	264	41
Total imports	<u>15,904</u>	<u>18,221</u>	<u>24,030</u>	<u>30,967</u>	<u>39,997</u>	<u>22,594</u>
Production	<u>12,350</u>	<u>13,111</u>	<u>12,374</u>	<u>12,380</u>	<u>12,450</u>	<u>4,311</u>
Total supply	<u>28,254</u>	<u>31,332</u>	<u>36,404</u>	<u>43,347</u>	<u>52,447</u>	<u>26,905</u>

CONFIDENTIAL

- 7 -

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to meet temporary shortfalls occurring when receipts of coking coal under long-term contract are inadequate.*

9. Japan's imports of coking coal from the United States nearly tripled between 1965 and 1969, when they reached 19 million tons. At the same time the US share of Japanese imports rose from 40% to about 50%. Australia, the other major supplier, provided about 40% of Japan's needs in 1969, while Canada, the USSR, and Poland accounted for most of the rest (see Table 4).

Appraisal of Alternatives to US Supplies

10. The Japanese would attempt to offset any decrease in US shipments by trying to increase imports from other sources. Tokyo already has taken steps to obtain substantially larger quantities from Australia and Canada and to increase imports from Poland and the USSR. Most of these arrangements are designed to meet the long-term needs of the expanding steel industry. Fulfilling these contracts requires developing new fields which will not begin increasing supplies to Japan appreciably before 1971. The expected increased supplies under older contracts will just match the industry's normal growth requirements of the next few years. Moreover, there remains in both the short and long run the problems of obtaining sufficient quantities of the high-coking, low-volatile, low-ash coal necessary for blending. Reportedly, most of the new non-US coals are medium to high volatile and high-ash coals.

11. The Japanese steel industry in the short run could not improve blast furnace technology sufficiently to compensate for a substantial decrease in US coking coal exports. Japanese blast furnaces currently use the best technology available. In 1969 the coke rate** of Japan's blast furnace was the lowest in the world -- 504 kilograms (kg), compared with 577 kg in West Germany, more than 600 kg

* The Japanese recently announced a voluntary restriction on spot purchases of US coking coal, but the amount of coal purchased on this basis is quite small in comparison with total imports from the United States.

** Amount of coke consumed per ton of pig iron produced.

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in the United States, 656 kg in the United Kingdom, and 685 kg in France. Although the coke rate in Japan is expected to dip to slightly under 500 kg in 1970 and some further improvement might be forthcoming in early 1971, the savings in coking coal would be negligible.

12. Japan does plan to reduce its needs for imported coking coal by developing substantial capacity for producing pre-reduced iron ore pellets and some capacity for direct reduction of iron ore. But both of these techniques are in the early development stages and will not be available soon. Japan could use a higher proportion of the light, high-volatile coals available from non-US sources by adopting the practice of stamping to produce a denser coke.* It is doubtful, however, that Japan could build or buy sufficient stamping equipment in the short term to appreciably reduce its need for high-quality US coal. Using a somewhat larger proportion of lower quality coking coal is an option open to the Japanese -- providing the shortfall of import of US coal is not too large -- but this would result in poorer quality coke and would reduce blast furnace efficiency.

13. Probably Japan would attempt to compensate for any substantial loss in US coking coal in the short run by large injections of heavy oils in its blast furnaces. Last March on an experimental basis for one day's operation, a coke rate of only 393 kg was achieved at Nippon Steel's Tobata Works by injecting 90 kg of heavy oil per ton of pig iron output in the No. 1 blast furnace. This exceptional performance was achieved by very careful selection of the blast furnace iron ore burden, which may not be possible on an industry-wide basis.

* *Stamping, used by some Communist countries, is a method whereby coking coal is ground very fine and compressed in the coke ovens by means of a ramming or tamping device.*

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14. A suspension of US coal exports would have a serious short-term economic impact on Canada and Japan. Populous Eastern Canada, almost wholly dependent on US coal, would suffer from power shortages, heating deficiencies, and lower steel output. The steel output of highly industrialized Japan would almost certainly decline sharply, causing major economic problems. US coal currently provides nearly 40% of Japan's coking coal and more than 80% of its premium-quality coking coal. The Japanese steel industry would find it difficult, if not impossible, in the short run to cope with any substantial reduction in US shipments. Current Japanese blast furnace and steelmaking technology requires premium-grade coking coal from the United States -- particularly for blending with the coals of lesser quality available from other sources. There is almost no short-run possibility of obtaining needed coking coal from either Japanese mines or non-US sources to offset US shipments. Furthermore, short-term changes in blast furnace techniques can lower coke import requirements only modestly. Although much less adverse than in Japan, a loss of US coal would be felt most by EC steelmakers who have recently increased their dependence on US premium-quality coking coal, but very severe problems are not likely to develop.

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